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Cecchetto, David

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## The Sonic Effect: Aurality and Digital Networks in *Exurbia*

Keywords: sound studies; media studies; sound art; music; deconstruction; networks

Abstract: This essay examines the problem of medial specificity in music and sound art, giving particular attention to Seth Kim-Cohen's call for a non-cochlear sound art based on the notion of "expansion" that has been decisive in visual arts discourses. I argue that Kim-Cohen's non-cochlear intervention in *In the blink of an ear*<sup>1</sup> might be productively pressured towards the concept of a "sonic effect" that acknowledges the material-discursive particularity of sound without recourse to the phenomenological claims of authenticity that Kim-Cohen (correctly) abhors. In service of this argument, the essay extensively discusses a sound and media artwork —*Exurbia*, created by myself and William Brent<sup>2</sup>—that leverages the metaphors of sound against existing understandings of specific forms of network communication. I argue that the conceptual and material dimensions of the project stridulate in a hum of recursive vectors for considering the constitution and consequences of networked aural interaction. *Exurbia* can thus be parsed in terms of medial specificity precisely because its digital aural materials are themselves discursive.

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$\frac{x}{2} = \frac{x}{200}$  At first glance, this equation may seem incorrect.<sup>3</sup> After all, how can a number divided by two be equivalent to the same number divided by 200? Of course, not only is the statement not impossible, but it is actually possible to solve for  $x$  almost instantaneously, without the machinations of calculation or any contextual information: the only possible solution is  $x = 0$ .

Notably, zero is an utterly abstract number (sic), in the sense that it does not make even secondary reference to a concrete material base. Thus, while the number two (for example) also doesn't refer to anything we can apprehend with our senses, it is at least apparent how the number's abstraction is theoretically tied to the empirical world; we can't imagine "the two itself," but we can imagine two apples, two cars, two options, etc. such that we can functionally connect the items in the list through their "two-ness." This is not the case for zero, which is utterly foreign to our physical, positivist reality.

The point is, if the variable  $x$  doesn't indicate anything that at least subtends a concrete system of logic (wherein  $x$  may be abstract, but it is an abstraction of some physical thing that we can at least feign grasping) the details of the surrounding material are precluded from any impact: two might as well be equivalent to 200. In order to maintain their specificity the details depend on the status of the variable because it is the variable  $x$  that is invariant in the equation. If  $x$  is not understood as being, *a priori*, a positive substantial element then we are unable to logically deduce a difference between two and 200.

If, on the other hand, we reach beyond the equation itself to limit  $x$  to being a non-zero number then we have the inverse problem, namely that  $\frac{x}{y} = \frac{x}{z}$  *only* if  $y = z$ .<sup>4</sup> The problem here is that if  $y$  and  $z$  are the same, then the equation is really just  $\frac{x}{y} = \frac{x}{y}$ , which is nothing more than a tautology. Taken together, then, these equations suggest that without the possibility of unlimited abstraction the limited abstraction—the ability to reach beyond its grasp—that any logical relation depends on becomes tied to its own particular circumstance, and thereby loses its prescriptive power. While we can take note of tautologies, we cannot reason from them; that is, a tautology by definition tells us nothing about the system or circumstances that produce it.

Taken together, we can generalize the problem that this equation points to as a problem of medial specificity in the arts. That is, attempting to make a claim about a medium  $x$  requires one to either abstract that medium from direct experience (as in the first reading of our exemplary equation) or to impose an otherwise arbitrary constraint on what “counts” as the medium, which can only lead to confirmation of the constraint's applicability in a given instance rather than to a statement about the medium itself (i.e. if it

is true, it will be tautological). Simply put, an aesthetic medium such as imagery, sound, paint, stone, etc. must always point beyond itself in order to articulate itself as an integral system, as something about which one can make a claim of authenticity. It is both necessary and impossible to insist on medial specificity.

This problem is familiar to visual arts scholars, particularly through the notion of “expansion” elaborated by Gene Youngblood in the context of cinema<sup>5</sup> and Rosalind Krauss with respect to sculpture.<sup>6</sup> Related to *différance* as it is outlined in Derridean grammarology, “expansion” is a means of recognizing the porousness of an artwork’s boundaries; the implicit verb in any frame (i.e. a frame is a framing, as Mieke Bal would have it); and the entanglement of artworks, culture, and discourse. As Clement Greenberg puts it, the work of a work is not wholly reducible to the boundaries of the work itself, and neither are those boundaries themselves uncontested or fixed.

While this line of thinking is old hat in the various discourses that make up the visual arts, it remains only peripheral to the dominant discourses of music and sound art. With respect to the institutionalized form of music that is problematically captured by the term “Western art music” (WAM), this is perhaps not surprising. There is, first of all, a foundational social conservatism in such music drawn from its colonial and sacred histories. More relevant to this conversation, though, is the medial purity that music is endowed with through its constitution as music: Walter Pater’s (in)famous and oft-repeated claim that “all art constantly aspires to the condition of music” perfectly encapsulates the fiction of music as an abstraction in the first sense of our equation, relating to nothing but itself.<sup>7</sup> That is, Pater’s claim posits music as the purest of the arts precisely because its “artness” makes reference only to itself; music is positioned as being

a-semiotic. Seth Kim-Cohen points out that this perception is discursively reinforced by the fact that “only music includes, as part of its discursive vocabulary, a term for the foreign matter threatening always to infect it: ‘the extramusical’.”<sup>8</sup>

Of course, not even a musician (especially not a musician!) would claim that WAM is entirely cut off from the world, and indeed even according to the most idealistic understanding, the musical project would necessarily include some means for music to affect beyond itself. The point, though, is that this affect is not always considered part of music “proper” or “the music itself,” but rather what music does.<sup>9</sup> What is indicated, then, is an insulation that is constructed via the rhetoric of music.<sup>10</sup> Thus, it isn’t the case that WAM—to the extent that it results from this genealogy—misapprehends itself as a kind of fixed, extra-discursive object, lacking a sense of its own contingency (as such a reading would miss the crucial aspiration of Pater’s claim), but rather that WAM aligns with the way that the modernist (visual) art project is often characterized, which is to say as evading “‘objecthood’ [...] by being the active (or enacted) site of internal relations” instead of including the external world within its purview.<sup>11</sup>

What makes this a problem for WAM—and indeed for WAM in general rather than just for specific musical works—is that the transubstantiation of sound into music takes place precisely via the activation or summoning of this rhetoric. The problem thus takes the tautological form of our opening equation: the rhetoric of music—which consists in the fiction that sound is “shaped” into a succession of sounds that can be situated on a continuum of musical meaning—is not conceived as supplementing a material base that is already musical, but instead is the very music that it promotes. Put differently, something is musical to the extent that it participates in a rhetoric of music—i.e. in the form of meaning

that is particular to music—but this rhetoric, precisely because it is particular to music, only comes to be from something being musical. In this view, "music" comes about only when sounds are made musically meaningful. In this sense, music is always-already simulated music, making reference only to itself.

The point I am working towards is that one cannot address problems of music and discourse by simply expanding music's semantic field. In the language of second-order systems theory, music can catalyze and be catalyzed by extramusical factors, but it cannot cause them; that is, music can activate (and be activated by) social, cultural, and political valences, but to the extent that these factors operate *via* logics that exceed those of music—and *vice versa*—a systematic distinction remains operative.<sup>12</sup> To characterize the rhetorical (e.g. notated) details of a piece of music (as opposed to the practices and institutions that collect around them) as meaningful is a project that is both necessary (to sustain the implicit value that it is necessary to invest in music) and doomed to fail in advance (because musical details are constituted tautologically, in and through their disconnection from the extramusical world). As I will return to shortly, music's medial specificity will always risk confirming (without necessarily confirming) its a-political valence, which is as sure a sign as any of a subsumption of agencies into a pre-existent politics that is indifferent to local details. That is, like any rhetoric that appears to possess closed borders of signification (i.e. to be constitutively insulated) the genealogy of music that flows through Pater has in fact simply naturalized the porousness of its boundaries. To the extent that (as Kim-Cohen writes, paraphrasing Derrida) "there is no extra-music"<sup>13</sup> it necessarily follows that there is also no music proper.

The decisive example here is the work of John Cage, which would seem to deploy the very expanded field that, I am arguing, music cannot avow. That is, Cage's extensive use of aleatoricism and his positivistic technologisation of silence are each in service of an understanding that would move music off the page and beyond the purview of an intentional composerly rhetoric. Quite simply, Cage's intervention expands the musical palette to include sounds that are "physically uniquely themselves" independent of their notation, completely liberated from "abstract ideas about them."<sup>14</sup>

However, while such gestures broaden the rhetorical palette available to musicians and constitute an important musical politics in themselves, they do not impact its purview. That is, the expansive inclusivity of such practice is accomplished via a colonizing process that in no way addresses the discursive insularity that prevents music from avowing its contingency. This is the case because an enormously problematic assumption lies at the heart of Cage's project, namely that sound signifies itself. Thus, as eldritch Priest argues,

Cage's effort to open musical experience to a wider materiality [...] could only be made effective through a rhetorical manoeuvre that ciphered the semiotic remainders of sound first through the measure of duration and then through the supposed paradoxical intentionality of silence. [...] Any sound was musical so long as it was intentionally heard as music and *un-heard* in its worldliness. That is, sounds are musical to the extent that their being-heard articulates the intentions that constitute the traditional horizon of listening musically while at the same time seeming to disarticulate those intentions that tradition places on the composer.<sup>15</sup>

Douglas Kahn argues a similar point, noting that "under the guise of a new aurality, an opening up to the sounds of the world, Cage built a musical bulwark against auditive culture, one founded on a musical identification with nature itself."<sup>16</sup> Kahn argues convincingly that this was accomplished precisely through the techniques that Cage shared with visual arts discourses of expansion: Cage extended the process of musical incorporation to include all audible, potentially audible, and mythically audible sounds, until "there existed no more sounds to incorporate into music, and [he had] formalized the performance of music to where it could be dependent on listening alone."<sup>17</sup>

In short, the medial specificity of sound mobilized in and as the rhetoric of music acts as our variable  $x$ , so that additional elements ( $y$  and  $z$ ) that are brought into relation with its redoubled abstraction do so only to the extent that they give up what is elemental to them. In practice, then, music can never be medially specific, since its specificity exists only prior to any particular instantiation of it. Or, by the same logic, music can *only* be medially specific, which amounts to the same thing: if music is only music in the sense (*pace* Cage) that music is only what we hear when we decide that what we're listening to is music, then it's not only the case that particular instances of music can't be medially specific (since even Cageian music would have to be defined according and in relation to something that is not music, i.e. a listener), but also that music must be medially specific if it is to be conceptualized and conceptually expanded (i.e. if even Cage is to speak of it as a limited concept that requires expansion). In the language of contemporary media studies, music thus presents itself as an origin (i.e. a creation myth) rather than a history.

As with our opening equation, the problem that music poses requires either an arbitrarily prescribed limit to the problem or an acceptance of a certain tautology. As may



be seen in the blossoming of subject matter that has obtained in musicology since at least the 1980s, sustaining this problem *as a problem* requires at once a means of registering a given musical practice in its particularity—some of which is medial—and continually resisting the lure of abstracting from this medial particularity.

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To speak of the medial specificity of music, then, is as fraught as speaking of the “truth” of painting, sculpture, photography, etc.. A fascinating distinction—or perhaps difference of emphasis—develops in the case of music, though. In the visual arts, the constitutive entanglement of works with that which exceeds them has been largely addressed through a turn towards conceptualism (in the broad sense) that explicitly engages the paradoxical way in which the discursive valences that subtend works also constitute them.<sup>18</sup> Music, on the other hand, has dealt with its excesses through sound art, which “as a discrete practice, is [...] the remainder created by music closing off its borders to the extramusical,” the *parole* that cannot be “comfortably expressed in the *langue* of the Western notational system.”<sup>19</sup> Again, though, this is not the result of different decisions by different actors within the respective discourses: because music is defined exclusively through its internal workings—because music is always in an important sense “pure music,” even though it never is—there is no other option available.

The problem is not so easily solved, though, even from the perspective of sound art. Returning to Cage, Kahn decisively notes the bracketing out of discourse in the apocryphal myth of the anechoic chamber that animates so much of his reception: in addition to the two sounds Cage hears—allegedly that of his nervous system and of his blood circulating, though this has been contested—Kahn notes a third, namely the one asking what the two

sounds he is hearing are. This is a crucial insight because "such quasi-sounds were, of course, antithetical to Cagean listening by being in competition with *sounds in themselves*, yet here he was able to listen and at the same time allow discursiveness to intrude in the experience."<sup>20</sup> Indeed, one could go a step further to insist that insofar as hearing and listening can be distinguished along the lines of concentration, to listen is to listen discursively. Moreover—and in order to preclude counter-arguments constructed around notions like "meditative" or "deep" listening—we should note that this also means that to *have listened* is to listen discursively. Language is the technology through which experience is registered as such, and this registration reveals both language and experience as always-already simultaneously present and absent in their relation.<sup>21</sup>

Emphatically, the soft-claim that listening and discourse are always-already entangled yields the hard (Derridean) claim against what Kim-Cohen calls the "essentialist reading of the two great bestowals of Cage and [Pierre] Schaeffer—silence-as-sound and sound-in-itself."<sup>22</sup> That is, Kim-Cohen criticizes a number of sound art practices that leverage translation into and out of the medium of sound for being "based on faith in a fundamental stratum of experience, on some essential ontological state, a metaphysics."<sup>23</sup> Thus, for example, he criticizes Rainer Maria Rilke's fantasy of playing the groove of a coronal suture with a phonographic stylus in order to articulate its "primal sound" for its implication that "there is a completeness in nature and that our sense of incomplete experience [...] is a product of our inadequate perceptual faculties."<sup>24</sup> As Kim-Cohen notes, this perspective—which aligns with the broader neo-Romantic sensibility that is made explicit in Rilke's poetry, but remains implicit in numerous sound art practices that feature

similar translations—is predicated on a belief in the type of foundational metaphysics that Derridean grammatology so thoroughly deconstructs.

Notably, Kim-Cohen's reading of Rilke is motivated directly against that of Friedrich Kittler, from whom the example is drawn in service of an argument that "sense perceptions are revealed as nothing more than neutral data flows."<sup>25</sup> While an extensive engagement with Kittler is beyond the scope of this paper, I will note that the connection that Kim-Cohen draws between sound art and Kittler's "interest in authorless media streams"<sup>26</sup> anticipates the way in which I discuss *Exurbia* in the final section of this paper. Kim-Cohen's assertion that "contextless data is gobbledygook"<sup>27</sup> aligns with *Exurbia*'s investigation of sound and networks, where the latter explicitly engages with how the relation of the two informs both and helps us to resist totalizing them under the respective signs of their nomination (i.e. "*the network*" and "*the sound itself*").

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An implicit question is posed by Kim-Cohen's call for greater acknowledgement of the discursive vectors that are active in sound art practices, and that make authentic self-presence impossible. Simply put: if sound art loses recourse to any kind of sonic authenticity—i.e. to an extra-discursive, categorical, *a priori* difference between sound and other sensorial experiences such as vision—and is entirely captured in discourse in the same way that the gallery arts are, what distinctions remain? Can sonic practices be distinguished from visual ones? Should they be? And of what would such a distinction be in service?

While *In the blink of an ear* offers an important intervention into the rapidly proliferating discussions of sound art, it is perhaps a shortcoming of the book that few

examples are given that might address these questions. One example that is given, however, is compelling: consider the insightful reading that Kim-Cohen offers of Jared Fowler's *Kosuth to Fowler* (2006), a piece that works with Joseph Kosuth's *Text/Context* (1979) as its source material. As Kim-Cohen recounts, the original (Kosuth) work consists of "two adjacent outdoor public billboards [that] display related texts referring to each other and to their respective methods of linguistic and visual communication."<sup>28</sup> In Fowler's treatment, the text's visual indicators (such as "see" and "text/sign") are changed to corresponding acoustic ones (such as "hear" and "speech/recording") and are "then read by a speech synthesizer, with the left text on the left side of the stereo field, the right text on the right."<sup>29</sup> Kim-Cohen notes that "the simultaneous transmission of the two texts accomplishes something that would be impossible with Kosuth's original,"<sup>30</sup> namely the erasure of the "literal and essential" space between the two texts.

The provenance of this productive difference is underemphasized by Kim-Cohen, though, which is perhaps a symptom of the book's avowed movement towards a non-cochlear sound art and presumably away from the medial specificity of sound. That is, while it is impossible to insist on something like "the sound itself," it nonetheless remains the case that certain characteristics flow more readily from certain materials; there are material differences, after all, between sound and vision, and it behooves us to be careful not to collapse these distinctions under the sign of discourse as though the latter meant something fixed and concrete. We can note, then, that there is a danger in Kim-Cohen's reading of *Kosuth to Fowler* of implicitly prioritizing the similarity of the *text* that the piece shares with its source material over the different media that distribute it (indeed, such a prioritization is even present in this sentence, which frames the text as the content of the

two media). This raises the question: how would one work through an analogous reading if we did not have the alibi of "shared material" created by the a-medial legibility of text, an alibi that is dangerously proximate to the notion that material can be passed between media without being changed? Simply put, if we treated the text exclusively as information (which it undoubtedly is, though not entirely) one could (mis)construct Kim-Cohen's reading of this piece as assuming precisely the type of metaphysical underpinning that he criticizes in Rilke and Kittler.

This is a subtle point, and in no way opposes Kim-Cohen's reading; in fact, he points in this direction by highlighting the fact that Fowler engages the Kosuth piece not only by appropriating its literal content—which would be the informational quality of the text, as opposed to what we might call its signifying capacity—but also by intervening in the conceptual field that the work constructs.<sup>31</sup> What I am pointing to, though, is something that is often stressed by systems theorists such as Niklas Luhmann: whereas deconstruction emphasizes the final undecidability of any signifying instance, systems nonetheless decide.<sup>32</sup>

What this points to, then, is a dimension of deconstruction that is regularly neglected but which is integral to it: its performativity. That is, the Derridean claim is not so much that all experiences partake of language's instability and ambiguity, but more that our knowledge of them does (and that they come to be for us only through becoming objects of knowledge). As a result, the inverse is also true: Derridean claims about language are predicated precisely on language's *not* being understood as a system that is closed off from the world, but rather as one that constructs a "border" that is always-ready seeping through with that which it excludes. That is, extrapolating a process into an observational

register (or a predictive or categorical one, for that matter) in order to delve into its meaning is not a neutral endeavor: understanding a process as a process, rather than as a random or even stochastic set of events, necessarily presumes a frame of reference that is privileged linguistically. The paradoxical (linguistic) logic of grammatology is performative in the precise sense that every constative claim enacts something supplementary to itself.

This performative dimension of deconstruction is crucial as it marks the vector of material specificity—even as that specificity remains under threat of erasure—through which we can insist on the specific implications of aural experience without validating the authenticity of that experience, provided we keep in mind that the economy of such experiences is linguistic. In this light, claiming that sound's "phenomenal characteristics—the fact that it is invisible, intangible, ephemeral, and vibrational—coordinate with the physiology of the ears to create a perceptual experience profoundly different from the dominant sense of sight"<sup>33</sup> does not undermine Kim-Cohen's non-cochlear orientation, but rather redoubles it: it takes the materiality of discourse seriously enough to insist not only that all experience is discursive, but also that the paradoxical quality of this discursiveness *necessarily* produces "extra-discursive" experiences as part and parcel of its movements. That is, experience is neither reduced nor constructed by language, but intensified as experience even and especially as such experience is under erasure.

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Returning to the question of the material specificity of sound, we might speak instead of a "sonic effect," a term through which we can emphasize a contingent operational frame.<sup>34</sup> In this understanding, "sonic materiality operates as 'micro-epistemologies,' with the echo the

vibration, the rhythmic, for instance, opening up specific ways of knowing the world,"<sup>35</sup> so that we might provisionally side-step ontological questions about sound without sacrificing our engagement with its unique material capacities. That is, an operational emphasis invokes a systems perspective that articulates the double-bind of the opening equation as a necessary element—a necessary impossibility, if you will—of the ongoing and ever-changing articulation of a sound/non-sound difference. By framing the problem in this manner we can eschew any definition of sound but nonetheless maintain the validity of questions pertaining to the unique intensities that aurality caresses. In this way, we can at least postpone throwing the baby out with the bathwater by directly equating sound art with the other gallery arts: even if language equally conditions what is thinkable across media, the *effect* of a perceived heightened abstraction in sound is no less real. Instead, the task becomes one of describing these "extra-discursive" effects in their discursivity, which is to say in such a way that they can couple with other metaphors. Such a task is not undertaken in the interest of reducing them to conceptual practices that are already familiar to us, but rather in the interest of catalyzing new forms of nonsense, new vectors of discursive recursion. In short, thinking through sonic effects is an attempt to avow the performative dimension of sound, which is always context-specific.

This is the context in which I'd like to discuss *Exurbia*, which explicitly pressures sonic effects as they obtain in the context of contemporary digital networked communities. What I will show in my analysis of the piece is a way of activating sound's (contingent) medial specificity, of putting it into play in order to learn something about both networks and aurality that we might not have known without their coupling. If these lessons remain contingent on the local instances of the metaphoric networks that they mobilize (i.e.

"sound" and "digital networks"), they will be all the more potent for it. In *Exurbia*, then, the bind of  $\frac{x}{y} = \frac{x}{z}$  is not resolved, but rather explicitly sustained.

Put simply, *Exurbia* is a digital sound-editing program that has four distinct features:

- The interface is time-intensive, being predominantly aural and executed in real time;
- Editing is destructive (i.e. there is no "undo" feature);
- All of the source materials (i.e. the sound samples) are shared among all users, but are used to produce discrete pieces;
- Each edit on a single user's computer impacts every instance of a single file throughout the *Exurbia* community (i.e. the materials are dislocated).

Taken together, these features introduce a reflexive component to the otherwise practically oriented environment that to my mind situates it as a creative work in its own right, i.e. rather than as a software tool. That is, *Exurbia* is an environment that is oriented towards composing works, but it is equally directed towards an engagement with the process itself of composition as it obtains in an aurally intensive networked digital environment.

In essence, the piece works as follows: participants navigate to a website where they can download the program, upload short sound samples to a communal pool, and/or listen to other users' contributions (both samples and pieces that have been composed using the program). After downloading, users open the program and authorize it to synchronize with the current batch of sound samples that are on the server, a process that can take up to five minutes and is necessary each time the program is opened.



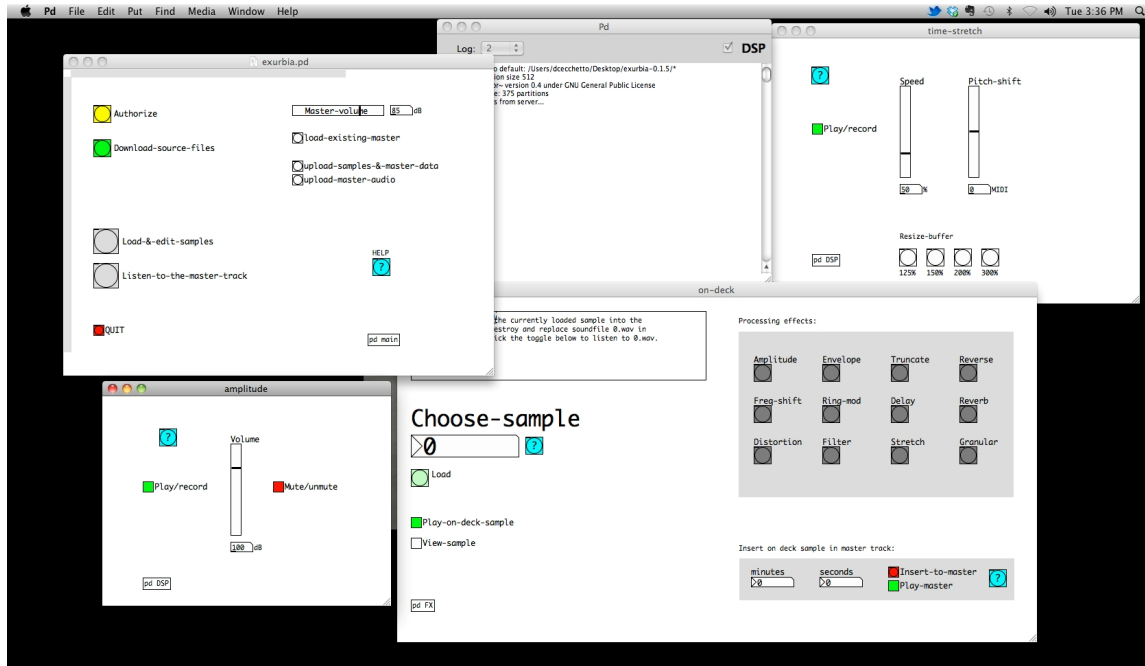


Figure 1: *Exurbia* screenshot featuring the following program windows (clockwise from top left): initialization, synchronization, and saving; system messaging; pitch- and time-shifting; sample insertion, and sample and edit selection; amplitude edit.

Once the files are synchronized, participants can then begin using the program, which is done by loading any individual sample file and applying any combination of twelve different parametric modifications to it (including multiple iterations of a single modification).<sup>36</sup> Importantly, and unlike in conventional editing programs, each time that a modification is applied the entire sample is played, and the majority of the modifiers feature parameters that are controlled in real-time using the mouse. Thus, for example, if a user wishes to increase the volume of a sample midway through it they must select the appropriate modifier and sample, play the sample, and ramp up the volume slider with the mouse at the appropriate time. Since there is no "undo" feature, if participants are not happy with the outcome they can only reverse the modification by attempting the same process, but attenuating the volume rather than increasing it.

When a user has finished editing a given sample, they insert it into a "master track" (which is completely unique to each user) by entering a start time in seconds into a number

box; each time a sample is inserted, the entire master track is played. Notably—and, again, unlike in most digital editing programs—there are no editing options beyond these insertions: samples cannot be removed or re-edited after insertion, and no global adjustments such as master volume boosts or attenuations are possible.

Crucially, inserting an edited sample replaces all instances of a sample in the collective source material with the one that has just been edited. This means that the changes apply equally to the piece that the local composer is working on and to the compositions of other users. This substitution, however, does not take place until the participant finishes their editing session and shuts down the program, so that it is entirely possible that a user might overwrite material in their own composition without realizing it until the next time they open the program.

The sample that is to be replaced is determined by the program in a predictable series, and is indicated by the time in which the sample to be edited was selected. As such, participants who do not want to alter every instance of a given sample have the option of gaming the system by "substituting" an inaudibly edited version of the same sample as that which is to be replaced.<sup>37</sup> This is a cumbersome process, but one that allows a degree of preservation from the consequences of one's compositional actions in the environment.

Indeed, while it is not possible to insulate one's composition from the activities of others, it is possible to (imperfectly) predict how editing activities will affect others' compositions and to act accordingly. That is, participants always have the option of listening to the most recently saved version of others' pieces (finished or in progress) from within the program environment, so that one can get a sense of how substantially one's edits will impact other works. This is, again, cumbersome, as it can only be accomplished by

listening to the works (i.e. there is no textual component that would tell a person what files are being used), which can only take place in real time. Compositions created in *Exurbia* are also audible online for non-users.

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It is precisely these technical machinations that constitute *Exurbia's* intervention into notions of "the sound itself" that are naturalized in digital technologies. A central conceptual gambit of the computer is to persuade us to think of sound as data, which is to say as extra-discursive content composed of discrete, manipulable, exchangeable units. By working in real-time *Exurbia* undermines the implicit fixity of this materiality, an undermining that is further emphasized through the program's collective siting of its "materials," as well as by the way that it conflates the process of creating with the creative outcomes. Consider again: any alteration of a sample requires a complete, real-time reiteration of the sample, and this reiteration by definition alters the broader context of the sample's articulation (by overwriting another sample that exists elsewhere) such that the outcome of the edit exceeds the desired change that precedes it both within the individual composition and the broader community. In short, *Exurbia* disrupts the injunction to categorize that is implicit in the quotidian notion of data by emphasizing the excesses and slippages that are constitutive of categories insofar as the latter are always reiterative.

*Exurbia's* mobilization of the sonic effect is in this sense a material-discursive intervention, one that amounts to a participatory experience of digital musical composition that is fundamentally different from the way that sound is typically treated in digital settings. If it is cumbersome then—and even in some senses a failed work as a result—

these impediments to smooth usage are as much positive markers of the work's difference as they are negative indications of its failure to actualize.<sup>38</sup>

At the center of *Exurbia*'s conceptual gambit is an obvious downplaying of visual graphics and other forms of data visualization, most notably manifested through the absence of visible sound waves. In this, the work explicitly contrasts related editing programs (ProTools, Garage Band, Audacity, Logic, etc.), as these are all built around the waveform as the basic interface for manipulating sounds (Figure 2). In constructing objects that can be manipulated according to their own instantaneous logics of manipulation, such programs spatialize the temporal element of sound. Thus, for example, a waveform editor treats a stereo output in ways that are inconceivable in real-time acoustic settings, i.e. as a composition of independent sound files that can easily and almost instantaneously be recombined, disarticulated, stretched, reversed, compressed, moved, muted, "paused," etc., as though the piece is merely an object or an image on the screen.

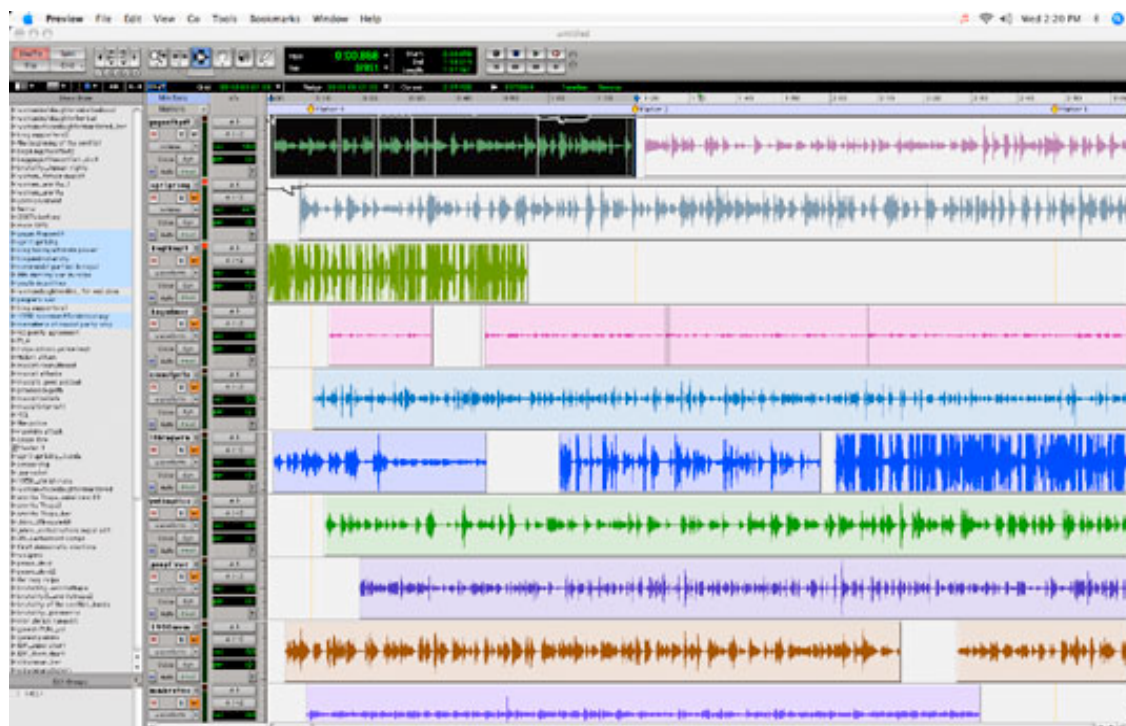


Figure 2: Screenshot of ProTools editing environment, a standard waveform editor.

To be clear, this is not to say that waveform editing somehow robs sound of an essential quality, but rather points to the way that sound—which, again, is always-already mediated by discourse in any setting—is constructed in the context of the computer's metamedial metaphors, which is to say by the computer's invitation to think of media as interchangeable through the language of ones and zeros.<sup>39</sup> In this way, waveform editors invite a conception of sound that aligns with the dominant (visual) paradigm of the computer wherein the informational content of a message—in a definition of information famously inherited from Claude Shannon—is literally divorced from its content. Data—the *lingua franca* of the computer, and a synonym for information on the computer—is atemporal in the precise sense that it is constitutively context-less: data is that which can be moved from one setting to the next seemingly without being changed.

This atemporality of data is of course not an extra-discursive fact, but rather constitutes the fiction through which human-computer interaction is possible. Thus, we can more specifically say that human agency *vis à vis* the computer takes place at the fulcrum of its two realities: a computer is both an ongoing computational process (literally voltage flows, but also the programs that are constantly running) and a series of discrete states (i.e. the window and icon metaphors, but also the translation of voltage flows into changes in voltage tracked through ones and zeros). To use a computer, then, is to map these two incommensurable realities into the impossible totality that we call a "computer," a mapping that is achieved by spatializing temporal vectors.

It is not surprising, then, that digital sound is conventionally overdetermined by its visual components. For example, one can sensibly speak of "moving" samples around and, moreover, anyone who has taught such programs will likely have received student works

constructed around the appearance of the waveforms (i.e. through visual symmetry, or the appearance of a narrative arc through the addition and subtraction of active tracks).<sup>40</sup>

*Exurbia* contrasts this tendency not by eradicating visibility through a dark interface (which would, in any case, not eradicate visibility at all but merely expand its purview *à la* Cage's positivization of silence), but instead by using visibility to instigate the types of temporal processes that are constitutive of sound in analogue settings. Users click, drag, and even type numbers in the *Exurbia* interface, but the effects of their actions—in the sample, the composition, and in the networked community—are only registered aurally.<sup>41</sup>

One result of this temporalized interface is that individual opportunities to edit in *Exurbia* literally go by in an instant, since they take place in real time. Editing, then, becomes less a process of "cutting and pasting" and shifts instead towards "channeling and remixing," metaphors that promote the constitutive entanglement of the edited sound and the act of listening/editing. Moreover, this phenomenon is heightened by the exclusive use of destructive editing, which again works to resist the reversibility of signs that visual editing programs assume, and that visibility in general institutes in its spatializing capacity.

Indeed, sound in general tends to be resistant to being represented as data in at least two ways.<sup>42</sup> Firstly, it is differentially and temporally embodied in that, as Aden Evens points out, "to hear is to experience air pressure changing [...]. One does not hear air pressure, but one hears it change over time [such that] to hear a pitch that does not change is to hear as constant something that is nothing but change."<sup>43</sup> Put simply, this means that "to hear is to hear difference,"<sup>44</sup> a quality that is not captured in the positivist framework of data, but that is activated in *Exurbia's* editing procedures. Indeed, when returning to the

program one can only listen for other users' interventions by listening for differences that are not verifiable.

A second way in which sound resists being expressed as data is through being relational, in the sense that it resists being placed; not in the sense of Bourriaud's "relational aesthetics" but rather in that it is never quite where it purports to be. For example, in contrast to a beam of light panning across a screen, a recorded sound is spatialized via a relative difference in intensity between two polarized loudspeakers: if it is perceived to be 80% to the right, this speaks to the fact that the right loudspeaker is four times as intense as the left. The twist that makes sound relational rather than simply relative—and which extends this element even to mono sounds—is that the sound also isn't where it appears to be (i.e. coming from the loudspeaker[s]) since it only comes to be as a sound through the differential act of hearing discussed above, which is the very act that would place it where it isn't. That is, the sense that the sound is coming from the loudspeaker is created by the physical palpation by that sound of the listener's auditory system (usually and most prominently their ears, though never entirely); since this touching is only (paradoxically) made possible by a (systemic) separation between the "source" and its reception, it is not really sensible to speak of the sound as originating in the source.<sup>45</sup> In the case of *Exurbia*, then, this is emphasized through the impossibility of composing in isolation from other users' interventions, even though all editing is performed within the fiction of such isolation.

In both these cases, a key factor is *Exurbia's* emphasis on "real-time," which acts in the program through an aesthetics of speed and dissipation. That is, the "real-ness" of *Exurbia's* editing is articulated through the perpetual vanishing of the present, through a constant

evaporation of the "sound object"—the fiction of a sample that exists as a sound outside of its sounding articulation— that takes place precisely through its (aural) appearance. And yet, the reverse is also true in that the cumulative effect of this approach is a painfully slow experience of digital music composition. According to anecdotes from users, pieces take roughly 40 to 50 times as long to create as they would in a standard waveform editor. Whereas with the latter, for example, one might make any number of edits to a recording prior to even listening to it, in *Exurbia* each of these takes the full time of the sample and/or the piece into which the sample is being inserted.<sup>46</sup> Here again, then, this slowness in editing amounts to a qualitative difference independent of the different compositional decisions that flow from it, because it temporalizes a process that is regularly thought spatially (indeed, even the term "sound file" suggests atemporality).<sup>47</sup>

If important elements of *Exurbia*'s intervention can be captured under the sign of temporality, this by no means exhausts its metaphors. In this case, we can additionally note that only registering edits aurally means that they are held mnemonically in a different manner than in a waveform editor; insofar as users are composing "pieces," these pieces are made of markedly different "matter" than is typically the case. There is firstly the dramatic vulnerability of each piece to every other—due to their use of a shared set of samples that is constantly changing in ways that are difficult to control—the result of which is a constitutive and unavoidable impermanence. More interesting, though, is the way that this forces participants to internalize their compositions in an unconventional manner. Unlike improvisational contexts that feature similar levels of contingency and ephemerality, *Exurbia*'s compositional orientation demands that one remember one's piece as an entire piece since the only way to know if there have been changes since one was last



in the environment is to remember what it sounded like when one last left it: edited samples are inserted into a "master track," so that the implicit injunction is to remember the piece as one has composed it, to provisionally bracket out the contingencies built into the system, or to at least conceptualize them as something that happens to the composition rather than as something that is integral to it).

Combined with the slowness of working in the *Exurbia* environment, this emphasis on memory creates a sense of intimacy with the work by giving the impression of a greater portion of the piece being stored "directly" in one's memory. Here again, the cultural dominance of visuality is pushed against itself: we are so accustomed to using visual abstractions—textual, iconic, etc.—as mnemonic devices that their absence gives us the sense of a "more embodied" experience. Thus, for example, we typically have the sensation of conscious cognition somehow taking place independently of the actual workings of our bodies, in contrast to which non-conscious forms of memory—commonly called "muscle memory"—are often constructed as the self to which we should be "true" in our decision-making. The speciousness of this claim in no way undermines its effects, and indeed it is no less beguiling when, for example, an individual with advanced Alzheimer's can still sing a childhood song while accompanying themselves on the piano. It is precisely this fiction of a mind-body separation—integral to so many of our quotidian activities, despite its unsustainability—that generates intimacy in *Exurbia*. I might go so far as to suggest that participants in *Exurbia* have the opportunity to "know" their compositions in a "deeper" affective register, in the same sense that an ear-worm can be said to crawl more deeply into our psyches than a memory of a visual image because it is persistent and involuntary.<sup>48</sup> Accepting that any ascription of agency is predicated on a (necessary) fiction, we might say

that the conventional fiction of "using the computer" is supplemented in *Exurbia* by one of the computer aurally "investing" us with our compositions.

In the same way that the piece pressures the metaphorical dominance of vision in contemporary understandings of sound, it also leverages numerous assumptions about the nature of community as one component of the immaterial origin of online social behaviors. Importantly, one should note that sociality is not a contemporary add-on to the computer (i.e. coming to be with the advent of social networking sites like Facebook) but a crucial component of its history. As Alexis Madrigal argues, with social networking sites "We're not giving our personal data in exchange for the ability to share links with friends. Massive numbers of people already did that outside the social networks. Rather, we're exchanging our personal data in exchange for the ability to publish and archive a record of our sharing" in part because the knowledge of having successfully shared is as important as the sharing itself.<sup>49</sup> This raises the question: to what extent are the communities that spring up as both the cause and effect of this sense of sharing specifically dependent on a record created in alignment with the dominant tropes of computational visibility?

*Exurbia* gestures towards this question by making the strange, aurally modulated individual compositional experience that it offers contingent on the behaviors of an online community. On one hand, *Exurbia's* communal experience is characterized by a vulnerability to others that recalls, say, a multi-user online game: one invests a significant amount of time and energy creating an avatar—in this case a composition—that is from the outset oriented both internally and externally. That is, the avatar acts as a kind of manipulable virtual mirror through which one amplifies and attenuates certain features, while at the same time acting as a screen through which one negotiates a social community.

Vulnerability, then, emerges in part from the recursive discrepancies between these two identities, between the signifying ecologies of the mirror and screen, which catalyze activity in one another without being able to cause it.<sup>50</sup>

*Exurbia* certainly engages this paradigm, but is peculiar in that its vulnerability doesn't necessarily coincide with any acknowledgment of one's impact on others. That is, at every level of the program visual and textual cues of the community's actions and desires are absent. Unlike most online community art projects, there are no chat forums, comment boxes, or even counters. There is, in short, no way to collectively narrate the connections between communal flows, pulsations, and mutations and the individuals who instigate them. The ethical worlds of each individual and the community are isolated from one another: the community acts on the participant by interfering with their relatively intimate compositional process, but the participant is able to choose whether or not they will be aware of or even acknowledge their own agency *vis à vis* the larger community. That is, the link between digitally networked activities and online communities is denaturalized: unlike most digital settings where the community is the necessary and *a priori* stage for articulations of individuality, participants have to actually choose to seek out the ramifications of their actions for other individuals in *Exurbia*.

In beta-testing, there was little evidence that such considerations played an active role (an exception being instances of "griefing"), which raises questions about the relation between sound and online communities.<sup>51</sup> *Exurbia*, for example, might be considered a means of testing whether a predominantly aural environment can provide sufficient ground for users to develop a sensibility and/or ethics with respect to other members of a digital network. If so, what changes in this configuration, and how can we begin to listen to

these voices? If not, how might this help us to unpack the complex considerations that are built into the word "community" as it obtains online? While it is a cliché that Internet technologies have the potential to both kill and cultivate communities, *Exurbia* realigns this problematic to suggest ways in which Internet communities are conventionally constituted through an exaggerated visuality, specifically through vision's spatializing capacity.

What this points to—borrowing from Rosalind Krauss—is the expanded field of online community, the way that the discourse of community takes part in the materiality of digital networks.<sup>52</sup> In this, *Exurbia*'s relation to network communities aligns with a general tendency of sound to be semiotically parasitic: sound tends to be implicated in other systems and rhetorics of meaning (such as music and language) but is not itself meaningful, except through the recursions that it introduces into these systems. Put differently, sound tends to intensify; we can note, for example, that better quality audio in audiovisual presentations encourages viewers to perceive visual displays as having higher resolution, while the opposite is not true.<sup>53</sup> In the case of *Exurbia*, then, the compositions become avatars by virtue of the networked community, but in so doing desubliminate the visual orientation of "avatar" as a locus of material-semiotics.

If the very nature of online communities is thus tied to a specific medial expression, this suggests that mediality constitutes a potential site for political activity even (and especially!) as it remains under erasure and contingent on its discursive context. Thus, aurality—as a material-discursive mode of affecting—might in itself constitute a politics. Beyond the specific challenges that it raises, then, *Exurbia* demonstrates the broader potential of thinking the problem of medial specificity through specific practices, putting the medial specificities of sound and digital technologies into play in a way that emphasizes

their operational rather than categorical dimensions. In this, a sonic effect is not only produced, but is specifically produced in the context of that which it affects and which affects it.

In the context of a paper about the problematic of medial specificity in music and sound art, *Exurbia* thus demonstrates the performative dimension of medial specificity as that which both undermines any constative ontological claims about sound and reinforces such claims' impacts. If we are to speak in a specific and historically informed way about art, technology, and culture, keeping the imbrication of materiality and discourse at the front of our minds is a political necessity. Doing so does not consist in bracketing out discourse, but it also must move beyond the implicit tautology of saying that everything is discourse *as though this means something concrete and limited*: it is true that we know things only through language, but the term "language" in this statement greatly exceeds mere text. Deconstruction is not a theory of textuality, but rather a theory of media and meaning of which literal textuality is but a sub-variety.

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<sup>1</sup> Seth Kim-Cohen, *In the Blink of an Ear: Towards a Non-cochlear Sonic Art* (New York: Continuum, 2009).

<sup>2</sup> William Brent and David Cecchetto, *Exurbia*, Digital., 2011, [www.audioexurbia.net](http://www.audioexurbia.net).

<sup>3</sup> This example borrows its impulse, if not its actual text or examples, from David Foster Wallace, *Everything and More: a Compact History of Infinity*, Great Discoveries (New York:

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Atlas Book, 2010), 30–32. In the cited section Wallace exemplifies the way that mathematics texts can tend to be "abstruse and technical [...] because of all the specifications and conditions that have to be put on theorems to keep them out of crevasses" (31n19).

<sup>4</sup> This is the implicit drive of our initial diffidence towards the equation  $\frac{x}{2} = \frac{x}{200}$ , namely that we know that if both sides of the equation are equal, and if both sides feature the same numerator, then the denominators should be the same.

<sup>5</sup> Gene Youngblood, *Expanded Cinema*, 1st ed. (New York: Dutton, 1970).

<sup>6</sup> Rosalind E Krauss, "Sculpture in the Expanded Field," in *The Originality of the Avant-garde and Other Modernist Myths* (Cambridge, Mass.: MIT Press, 1985).

<sup>7</sup> Walter Pater, "The School of Giorgione (e-text)," *Victorianweb.org*, accessed August 16, 2013, <http://www.victorianweb.org/authors/pater/renaissance/7.html>.

<sup>8</sup> Kim-Cohen, *In the Blink of an Ear*, 39. One might argue that 'paratextuality' marks a similar vector in literary interpretation, but Kim-Cohen's general point stands.

<sup>9</sup> I'm grateful to the editors for reminding me that there is increasingly work that takes up the position that music cannot be considered to be distinct from the physical-psychical experience of making and listening to music and Nina Sun Eidsheim, "Sensing Voice: Materiality and the Lived Body in Singing and Listening," *The Senses and Society* 6, no. 2 (July 1, 2011): 133–155, which treats music as an experience of the total sensorium, is particularly fascinating in this respect. I agree wholeheartedly, but would also point out that it is telling that even as recently as 2011 (and in a journal that is not particular to musicology, no less!), Eidsheim feels compelled to begin her argument by distinguishing her methods from "common methods of musical representation and analysis [because these tend to] evidence Western culture's preoccupation with what notation can capture and preserve" (134).

<sup>10</sup> In this paper I use the term "rhetoric" in the broadest sense, to indicate methods of persuasion. Thus, for example, music is a method that persuades us that sounds can be selected and ordered such that they become meaningful, and specifically musically meaningful. In this approach to the term I am grateful to Marcel O'Gorman.

<sup>11</sup> Kim-Cohen, *In the Blink of an Ear*, 59.

<sup>12</sup> To be clear, this is not a critique of music *per se* nor is it a situation that is unique to music, but is rather a statement about how systems operate. There is an obvious parallel here to Luhmann's famous argument that "Humans cannot communicate; not even their brains can communicate; not even their conscious minds can communicate. Only communication can communicate." Niklas Luhmann, "How Can the Mind Communicate?," in *Materialities of Communication*, ed. Hans Ulrich Gumbrecht and Karl Ludwig Pfeiffer, Writing Science (Stanford, Calif: Stanford University Press, 1994), 371.

<sup>13</sup> Kim-Cohen, *In the Blink of an Ear*, 107.

<sup>14</sup> John Cage, quoted in Richard Kostelanetz and Joseph Darby, eds., *Classic Essays on Twentieth-century Music: a Continuing Symposium* (New York : London: Schirmer Books ; Prentice Hall International, 1996), 185.

<sup>15</sup> eldritch Priest, *Boring Formless Nonsense: Experimental Music and the Aesthetics of Failure* (New York: Bloomsbury Academic, 2013), 58–59.

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<sup>16</sup> Douglas Kahn, *Noise, Water, Meat: a History of Sound in the Arts* (Cambridge, Mass: MIT Press, 1999), 162.

<sup>17</sup> *Ibid.*, 164.

<sup>18</sup> Or, more accurately, *turns* towards conceptualism, as I am not referring to Conceptual Art specifically. In the context being presented here, Duchamp's urinal is as "conceptual" as Morris's boxes or Pollock's action paintings; in each case, the rhetoric of the work is explicitly taken up in discursive logics that exceed the work proper. Considered from this perspective, then, we can separate the movement of Conceptualism that gains prominence and then fades (as does Cubism, for example) from the legacies of making the role of discourse explicit that remains an active component of visual arts practice today.

<sup>19</sup> Kim-Cohen, *In the Blink of an Ear*, 107.

<sup>20</sup> Kahn, *Noise, Water, Meat*, 190.

<sup>21</sup> I exemplify this as follows in "Deconstructing Affect...": "my digestive system might well behave extra-linguistically, but my experience of it as a functional operation (i.e. a system that digests my food) is linguistic; I can say neither that my digestive system preexists, for me, its meaning (which would be to say that it pre-exists itself), nor that the meaning of my digestive system pre-exists it (because I can only know it insofar as I can experience it)." David Cecchetto, "Deconstructing Affect: Posthumanism and Mark Hansen's Media Theory," *Theory, Culture & Society* 28, no. 5 (September 21, 2011): 9.

<sup>22</sup> Kim-Cohen, *In the Blink of an Ear*, 259.

<sup>23</sup> *Ibid.*, 99.

<sup>24</sup> *Ibid.*, 97–98.

<sup>25</sup> *Ibid.*, 98.

<sup>26</sup> *Ibid.*, 100.

<sup>27</sup> *Ibid.*

<sup>28</sup> *Ibid.*, 233. As an example, offered by Kim-Cohen, the text on the left side of the billboard begins with "What do you see here? The text/sign to the right presents itself as something else, something we could normally take for granted," while that opposite it on the left reads "Can you read this? This text/sign to the left expects you to read more than it provides, but it provides more than is needed to mean what it does."

<sup>29</sup> *Ibid.*, 234.

<sup>30</sup> *Ibid.*

<sup>31</sup> For example, he argues that the simultaneity of the Fowler "problematizes the cross-referentiality of the two texts" in the Kosuth. *Ibid.*, 235..

<sup>32</sup> For an excellent introduction to the relationship between second-order systems theory (SOST) and deconstruction, see Cary Wolfe, "Meaning as Event-Machine, or Systems Theory and 'The Reconstruction of Deconstruction'," in *Emergence and Embodiment: New Essays on Second-Order Systems Theory*, ed. Mark B. N. Hansen and Bruce Clarke (Durham: Duke University Press, 2009). Luhmann situates SOST—which builds on Derrida's damning critique of systems theory in "Structure, Sign, and Play" and elsewhere—as "the reconstruction of deconstruction."

<sup>33</sup> Frances Dyson, *Sounding New Media: Immersion and Embodiment in the Arts and Culture* (Berkeley: University of California Press, 2009), 4.

<sup>34</sup> This term is reappropriated from my colleague Caroline Langill's term "living effect," which she in turn borrows from Norman White. Hereafter, all uses of the term "sound"

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stand in for a nexus of sonic effects; I use the short-form "sound" in some instances only for the sake of grammar.

<sup>35</sup> Brandon LaBelle, *Acoustic Territories: Sound Culture and Everyday Life* (New York: Continuum, 2010), xxv.

<sup>36</sup> These modifications are all standard digital audio manipulations, including changes in amplitude, reversal, granulation, reverberation, etc.. Such modifications would commonly be called "effects," as in an "effects unit" used with a guitar. I've used the less common terminology here to avoid confusion with the way the term "effect" is otherwise used in this article.

<sup>37</sup> For example, one could do an "edit" play-through of the volume parameter without making any alterations.

<sup>38</sup> Of course, other approaches to electronic music can also be cumbersome, and microsound and tape composers often see their work as physical, messy interactions with actual material, even though their work is digital. See, for example, "Minimal Objects in Microsound" in Joanna Teresa Demers, *Listening through the Noise: The Aesthetics of Experimental Electronic Music* (Oxford ; New York: Oxford University Press, 2010). However, I would argue that the frustration of working with *Exurbia* I am discussing here is distinct from such cases and is in some senses the opposite: it is difficult to feel as though one is making a mess because one's actions are diffused through an interface that makes them slow and coarse. This is more akin to the frustration of trying to fix a computer by rebooting it than it is to the trope of playing in a digital sandbox.

<sup>39</sup> See Lev Manovich, "Understanding Meta-Media," *CTheory* (October 26, 2005), [www.ctheory.net/articles.aspx?id=493](http://www.ctheory.net/articles.aspx?id=493)..

<sup>40</sup> This claim is admittedly anecdotal.

<sup>41</sup> There is an interesting resonance in this respect between *Exurbia* and early electronic instruments developed prior to screen-based user interfaces. A key difference remains the network component of the piece, though, which acts like an (unprecedentedly large) inter-computer patching system.

<sup>42</sup> Although I do not use the term sonic effect, certain observations about sound's medial specificity in the section below are borrowed from the Introduction to David Cecchetto, *Humanesis: Sound and Technological Posthumanism*, *Posthumanities* 25 (Minneapolis: University of Minnesota Press, 2013). Specifically, I argue there that sound can be characterized as a simultaneous palpation of four medial vectors: it is semiotically parasitic; differentially and temporally embodied; relational; and multiplicitous.

<sup>43</sup> Aden Evens, *Sound Ideas: Music, Machines, and Experience*, *Theory Out of Bounds* v. 27 (Minneapolis: University of Minnesota Press, 2005), 1.

<sup>44</sup> Ibid.

<sup>45</sup> Tinnitus offers a special, fascinating, and not yet entirely understood exception to this scenario that, in Steven Connor's hands, redoubles the paradox I'm alluding to. See Steven Connor, "Auscultations" (presented at the Sonic Acts XIII: The Poetics of Space, Amsterdam, 2010).

<sup>46</sup> Pre-listening edits would routinely include cutting of excess material at the beginning and end of clips, volume normalization, noise cancellation, etc.

<sup>47</sup> Moreover, this slowness isn't just a matter of the pieces' taking more time to make and to listen to, but also manifests in the sounds of the works produced: the decreased editing



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acuity that is a paradoxical companion to this slowness results in a kind of coarseness or clunkiness that is particular to the environment. Where compositions produced with ProTools might dance lithely across the stereo field, *Exurbia's* compositions tend to stumble along with the impotently brute movements of a toddling child.

<sup>48</sup> This is of course not always the case as there is significant variance both within and between individuals. However, there is some evidence that music seems to more regularly induce involuntary semantic memories. Victoria Williamson conjectures that this may be because "music is more deeply encoded than words. Music activates multiple brain areas (usually more than simply hearing words) and can activate some of the deepest reward centres. And if something has more connections in the mind then it is more likely that it will be re-activated compared to something with fewer connections." See Victoria Williamson, "Earworm Interview," blog, *Music Psychology with Dr. Victoria Williamson*, July 3, 2012, <http://musicpsychology.co.uk/earworm-interview/>.

<sup>49</sup> Alexis Madrigal, "Dark Social: We Have the Whole History of the Web Wrong," *The Atlantic*, October 12, 2012, <http://www.theatlantic.com/technology/archive/2012/10/dark-social-we-have-the-whole-history-of-the-web-wrong/263523/>.

<sup>50</sup> That is, the excitation is heavily mediated by the constraints and affordances of the system that is perturbed.

<sup>51</sup> "Griefing" is a term typically used in the context of online gaming to indicate a harmful action done to another player through the means provided by the game's design. In the case of *Exurbia*, one composer overwrote a large number of samples with silence. See "Urban Dictionary: Griefer," accessed August 16, 2013, <http://www.urbandictionary.com/define.php?term=griefer>.

<sup>52</sup> The question of whether this goes both ways is beyond the scope of this paper, but it is certainly worth asking: to what extent does the discourse of digitality—independent of any "actual technologies"—inform our offline understanding of community?

<sup>53</sup> Brenda Laurel, cited in Dyson, *Sounding New Media*, 140.

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